

APPENDIX E
AIRSPACE DESCRIPTION AND UTILIZATION

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1.0 INTRODUCTION

Several aspects of the Shaw Airspace Training Initiative (ATI) include expanded and modified use of Special Use Airspace (SUA). During scoping for the Shaw ATI Environmental Impact Statement (EIS), concerns were raised about the competing use of the airspace between military aircraft and other commercial and general aviation traffic in the regions. To address these concerns, the United States Air Force (Air Force) and the Federal Aviation Administration (FAA) determined that a quantitative analysis of use of the airspace in question would assist in determining the level and severity of potential impacts to the aviation community in the region. This appendix presents the findings of this assessment.

2.0 BACKGROUND

There are two basic elements of the Shaw ATI modified airspace proposals that have the potential to interact with other aviation use in the region.

The first concerns the proposed restructuring of the Gamecock Military Operations Area (MOA) complex. The development of the proposed Gamecock E MOA, bridging the airspace between the existing Gamecock D MOA and Poinsett Electronic Combat Range (ECR) will add new Special Use Airspace (SUA) to the region. Developing the proposed Gamecock F MOA underlying the existing Gamecock D MOA will increase the volume of low-altitude military training airspace in the region.

The second involves the conformal restructuring of the Bulldog MOAs, which would add additional low-altitude military training airspace in that region.

To assess these issues, the Air Force identified specific locations for the collection of radar data to determine levels-of-use in these areas of concern. These areas are detailed below.

3.0 ASSESSMENT AREAS

To isolate air traffic data in the areas of concern, the Air Force identified “gates,” or corridors of airspace that would capture the use of the airspace areas of concern. These locations are described below.

3.1 Gamecock MOA Complex

Jacksonville Air Route Traffic Control Center (ARTCC) gathered data from 1 October through 31 October, 2004 in the area encompassed by the proposed Gamecock E and proposed Gamecock D/F MOAs. Data collected included Instrument Flight Rule (IFR) traffic only. In the area encompassed by the proposed Gamecock E MOA, IFR traffic in the 8,000 feet above mean sea level (MSL) to Flight Level (FL) 220 altitude regimes was collected; for the Gamecock D/F areas, traffic from 5,000 feet MSL to 12,000 feet MSL was provided.

3.2 Bulldog A and B MOAs

Atlanta ARTCC gathered data from 1 June through 30 June, 2005, for the area encompassed by the Bulldog A and B MOAs. Data collected encompassed altitudes ranging from the surface to FL 270.

4.0 ASSESSMENT PROCESS

The FAA collected traffic data for the areas of concern. For the Gamecock MOA complex, data were collected from October 1, 2004, through October 31, 2004. For the Bulldog MOAs, data were collected from June 1, 2005 through June 30, 2005.

4.1 Gamecock Assessment

For the Gamecock Complex, data collected included radar depictions of flight tracks for selected days, and specific aircraft types for all aircraft using the airspace. Data were then grouped by daily operations. Data were segregated as commercial traffic [Air Carrier/Air Taxi (AC/AT)], general aviation traffic (GA), and military (MIL). Flight tracks occurring on October within the proposed Gamecock E region are presented in Figures 1 through 3 below. Total traffic in the region for the month of October is shown in Table 1, and graphically in Figures 4 through 6. Similar data for the Gamecock D/F region are presented in Figures 7 through 12, and Table 2.

Figure 1. Radar Track Data in Proposed Gamecock E Region October 5, 2004

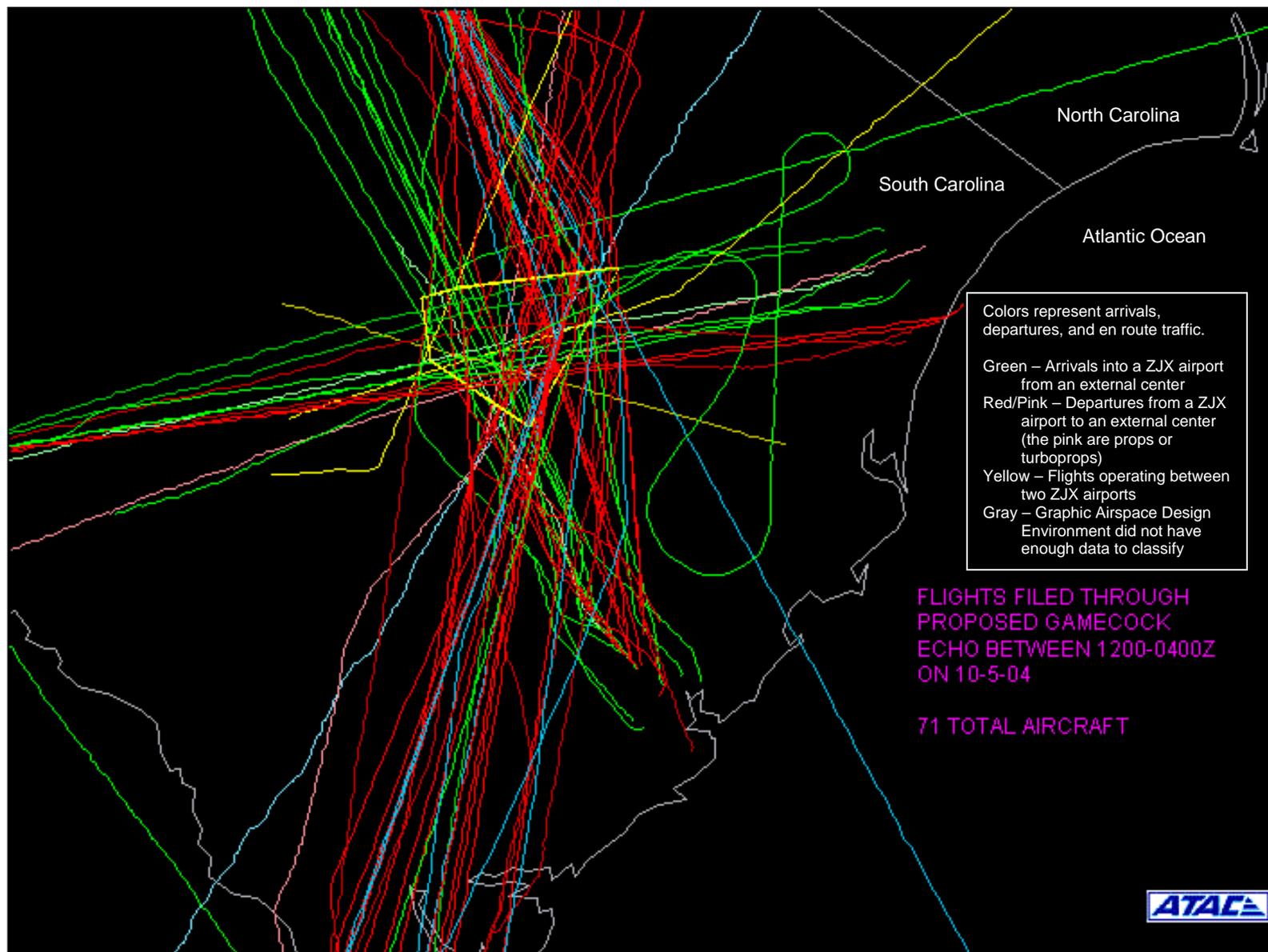


Figure 2. Radar Track Data in Proposed Gamecock E Region October 15, 2004

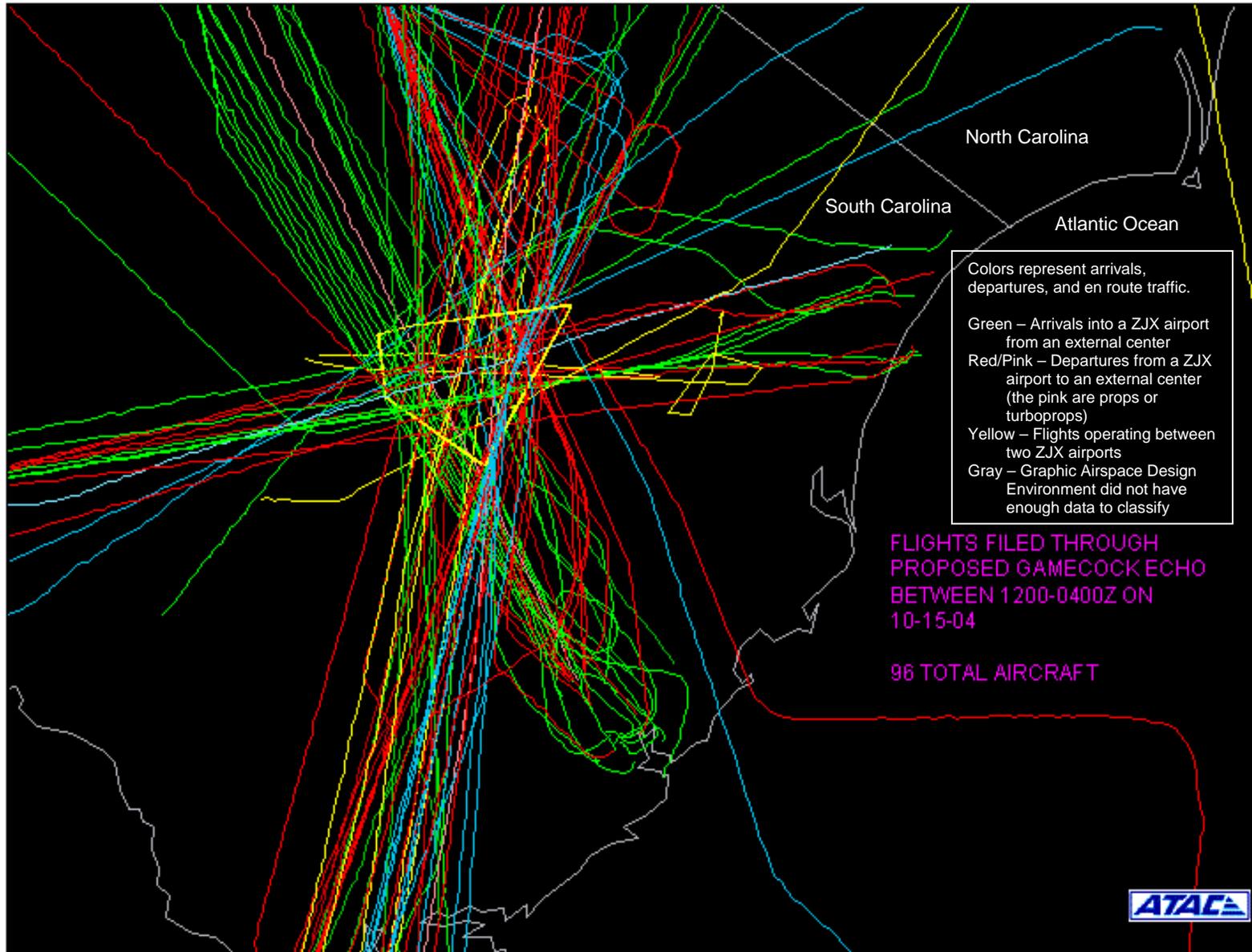


Figure 3. Radar Track Data in Proposed Gamecock E Region October 27, 2004

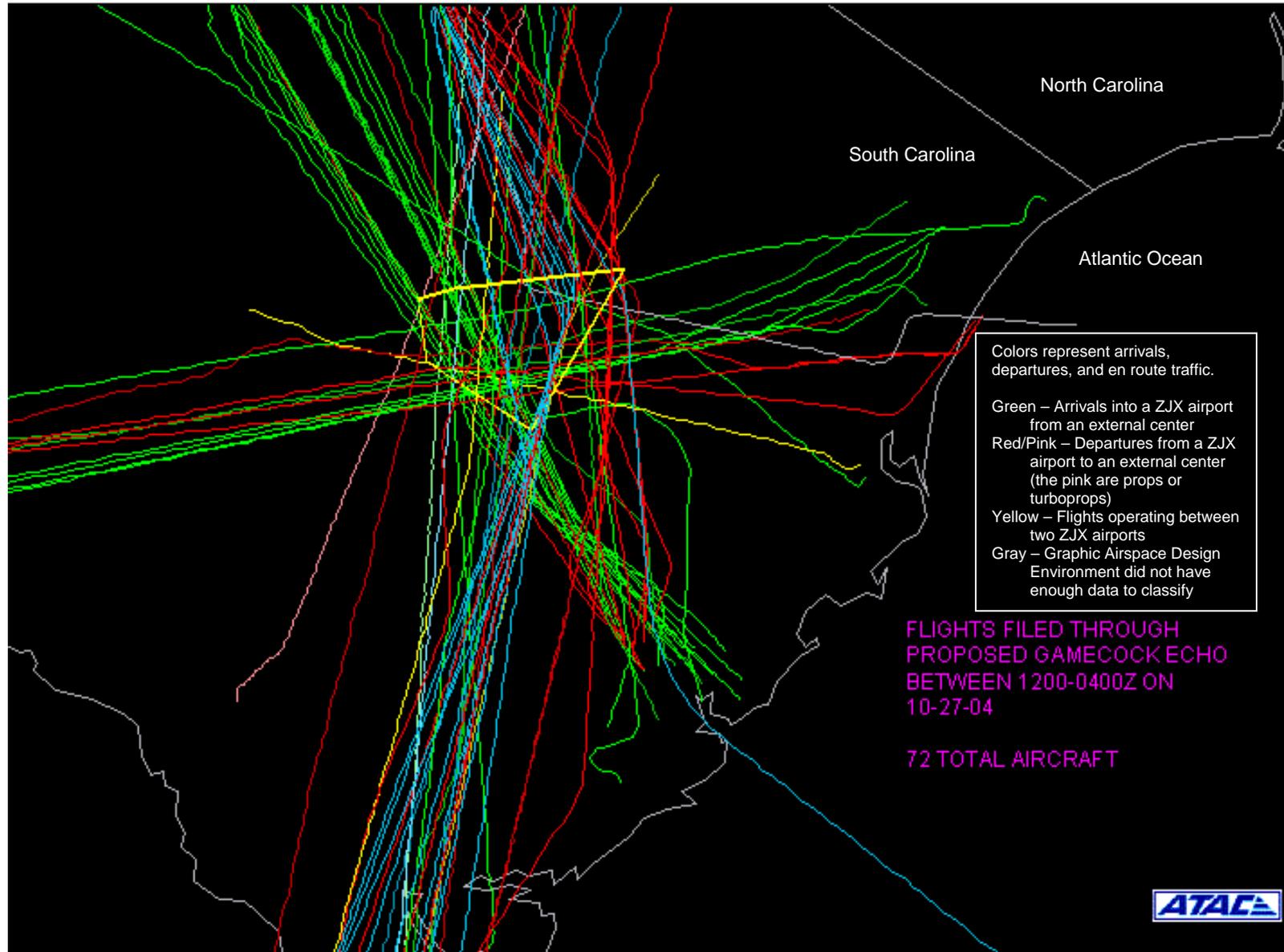


Table 1. Gamecock E Region Traffic Counts For October 2004

GAMECOCK E TRAFFIC COUNTS					
October 2004					
<i>Date</i>	<i>AC</i>	<i>AT</i>	<i>GA</i>	<i>Mil</i>	<i>Total</i>
1-Oct	35	25	19	4	83
2-Oct	32	38	10	4	84
3-Oct	44	37	17	3	101
4-Oct	28	24	19	2	73
5-Oct	23	28	17	3	71
6-Oct	26	22	21	1	70
7-Oct	19	26	28	5	78
8-Oct	32	22	32	4	90
9-Oct	37	38	11	1	87
10-Oct	37	26	30	1	94
11-Oct	30	26	28	1	85
12-Oct	23	27	20	6	76
13-Oct	22	20	23	8	73
14-Oct	27	32	24	8	91
15-Oct	22	34	31	9	96
16-Oct	36	34	15	4	89
17-Oct	29	27	24	8	88
18-Oct	33	29	16	6	84
19-Oct	24	30	32	7	93
20-Oct	22	25	20	6	73
21-Oct	22	33	33	6	94
22-Oct	30	30	38	3	101
23-Oct	40	35	9	3	87
24-Oct	34	28	24	1	87
25-Oct	31	26	21	3	81
26-Oct	25	19	19	11	74
27-Oct	25	24	23	0	72
28-Oct	28	25	26	4	83
29-Oct	27	26	28	6	87
30-Oct	33	26	13	5	77
31-Oct	32	26	20	2	80
Total	908	868	691	135	2602
Average	29.3	28.0	22.3	4.4	83.9
Percent of Total	34.9%	33.4%	26.6%	5.2%	100.0%

Figure 4. Aircraft Using Proposed Gamecock E Airspace October 1 through 10, 2004

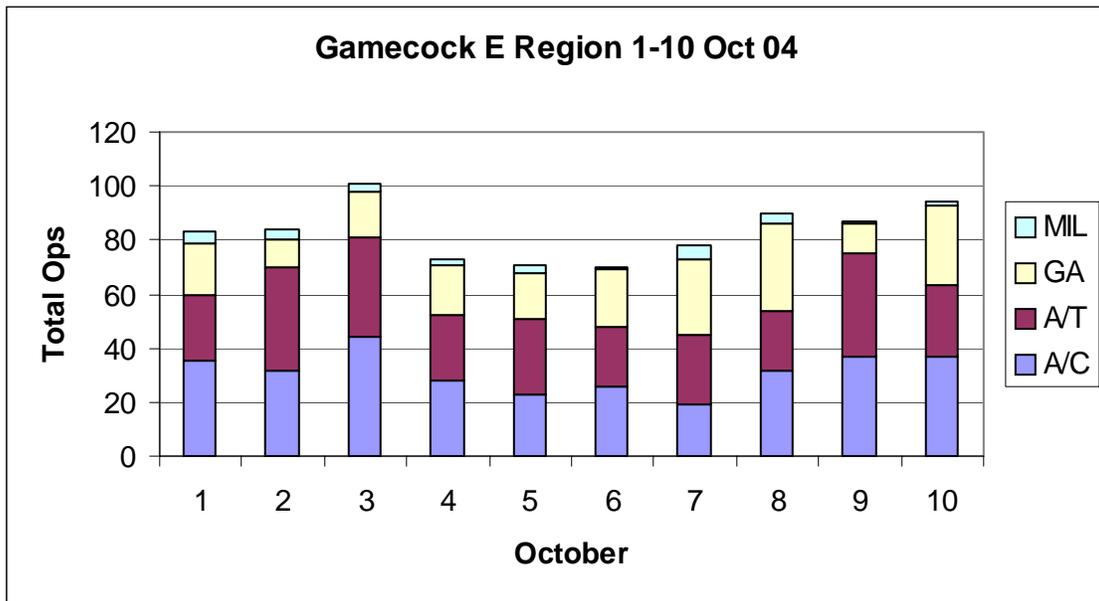


Figure 5. Aircraft Using Proposed Gamecock E Airspace October 11 through 20, 2004

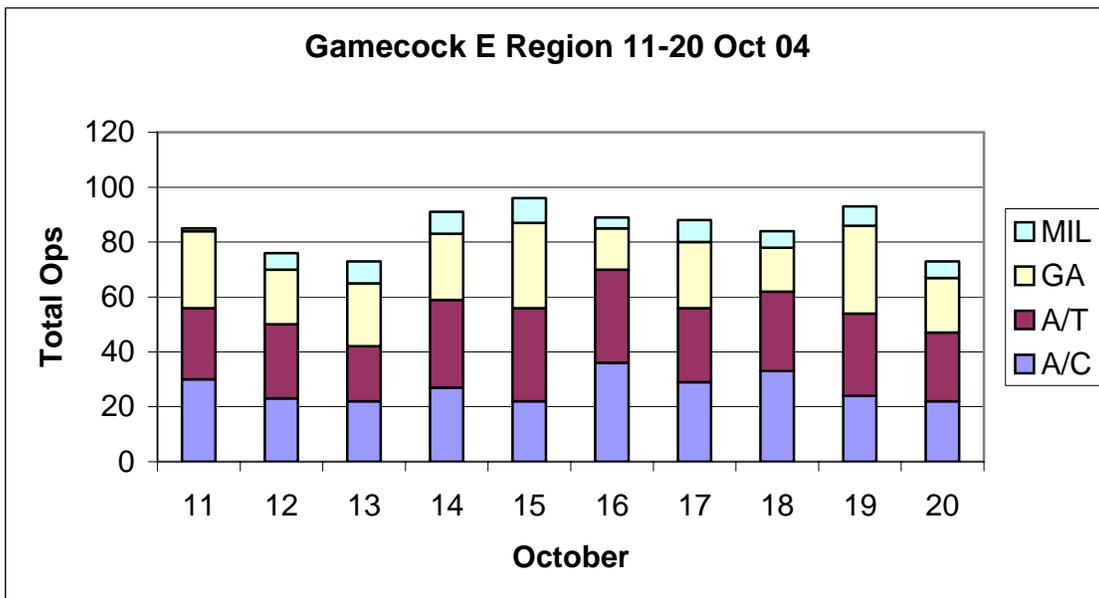


Figure 6. Aircraft Using Proposed Gamecock E Airspace October 21 through 31, 2004

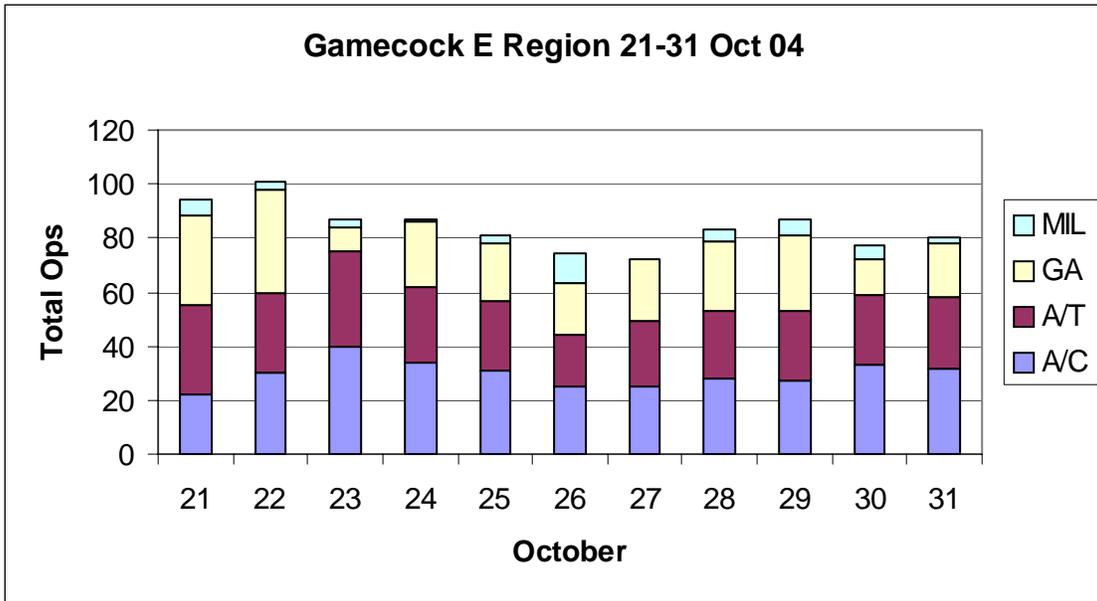


Figure 7. Radar Track Data in Gamecock D/F Region October 5, 2004

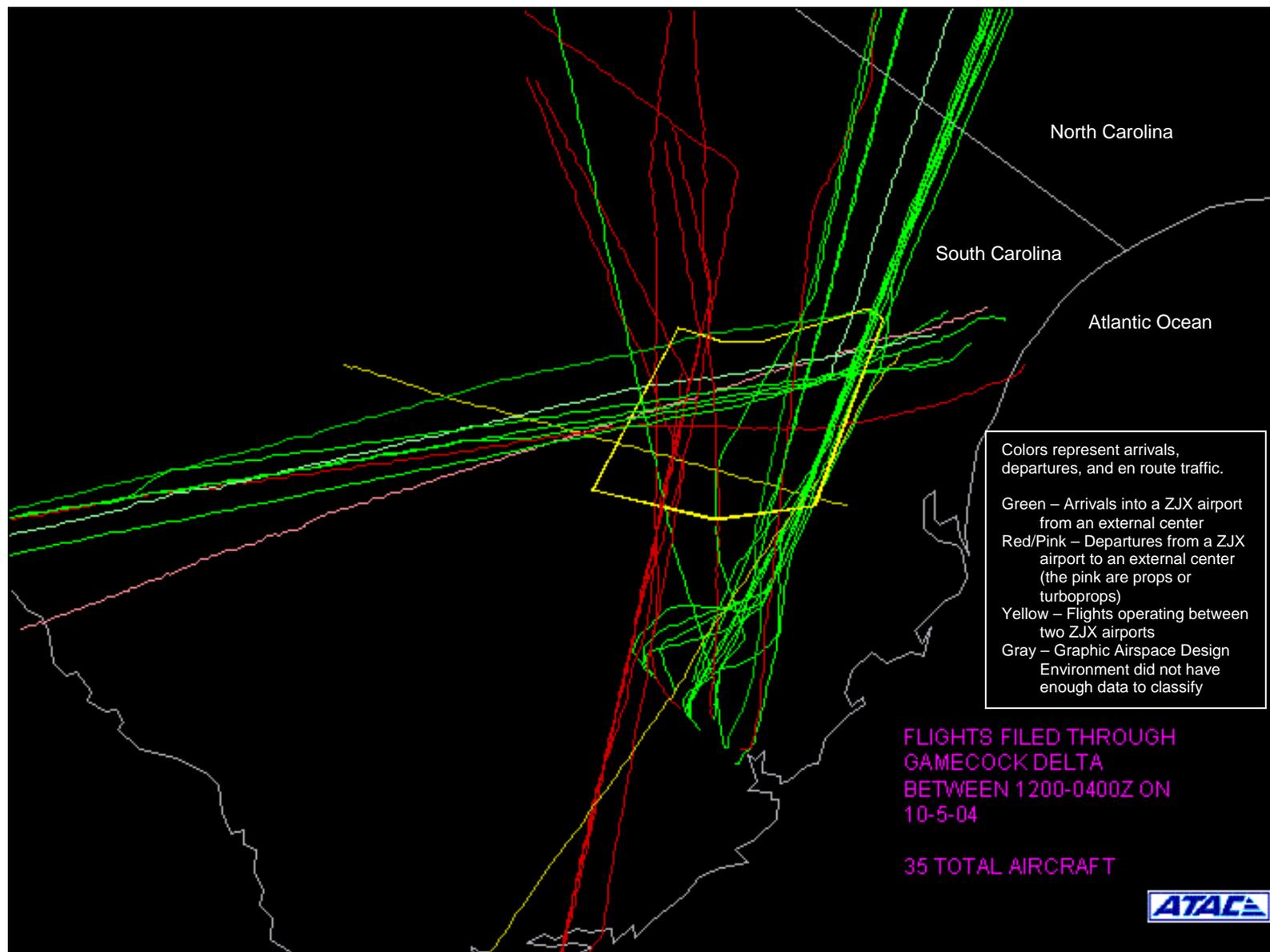


Figure 8. Radar Track Data in Gamecock D / F Region October 15, 2004

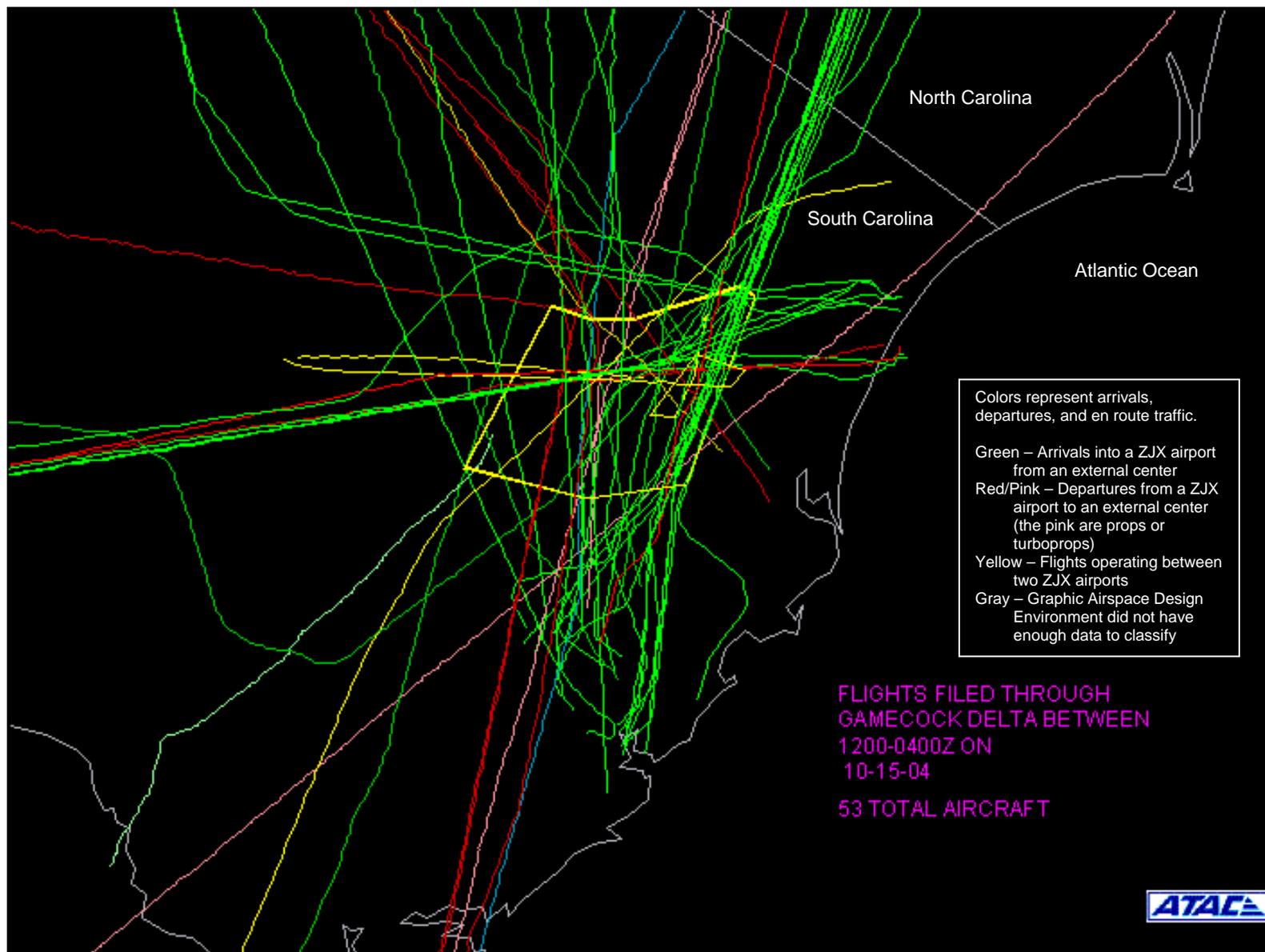


Figure 9. Radar Track Data in Gamecock D/F Region October 27, 2004

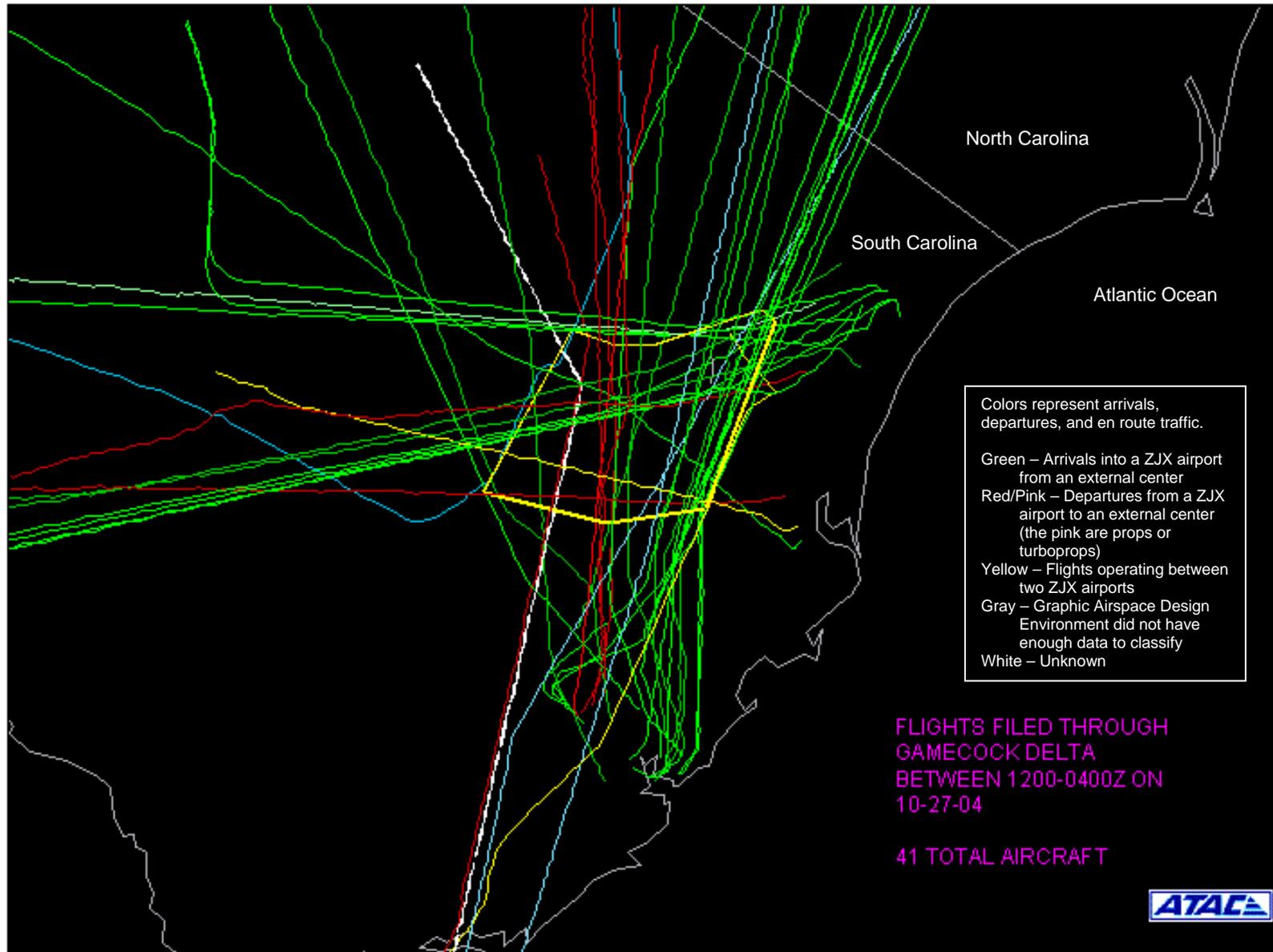


Table 2. Gamecock D/F Region Traffic Counts For October 2004

GAMECOCK D TRAFFIC COUNTS					
October 2004					
<i>Date</i>	<i>AC</i>	<i>AT</i>	<i>GA</i>	<i>Mil</i>	<i>Total</i>
1-Oct	8	25	12	5	50
2-Oct	4	24	8	3	39
3-Oct	7	36	9	2	54
4-Oct	6	12	11	2	31
5-Oct	3	21	11	2	37
6-Oct	9	17	12	1	39
7-Oct	7	15	9	4	35
8-Oct	17	24	14	4	59
9-Oct	9	34	7		50
10-Oct	11	21	18	1	51
11-Oct	10	18	13	3	44
12-Oct	6	22	9	4	41
13-Oct	5	21	16	4	46
14-Oct	6	16	9	4	35
15-Oct	8	20	18	5	51
16-Oct	7	21	6	2	36
17-Oct	8	30	15	1	54
18-Oct	6	19	2	4	31
19-Oct	3	18	9	3	33
20-Oct	6	17	11	7	41
21-Oct	6	26	13	2	47
22-Oct	8	21	22	2	53
23-Oct	12	22	5		39
24-Oct	5	31	14	1	51
25-Oct	6	18	11	3	38
26-Oct	5	15	12	4	36
27-Oct	8	19	12	2	41
28-Oct	9	18	10	2	39
29-Oct	4	20	16	3	43
30-Oct	8	27	5	6	46
31-Oct	7	19	6	1	33
Total	224	667	345	87	1323
Average	7.2	21.5	11.1	2.8	42.7
Percent of Total	16.9%	50.4%	26.1%	6.6%	100.0%

Figure 10. Aircraft Using Gamecock D / (F Proposed) Airspace
October 1 through 10, 2004

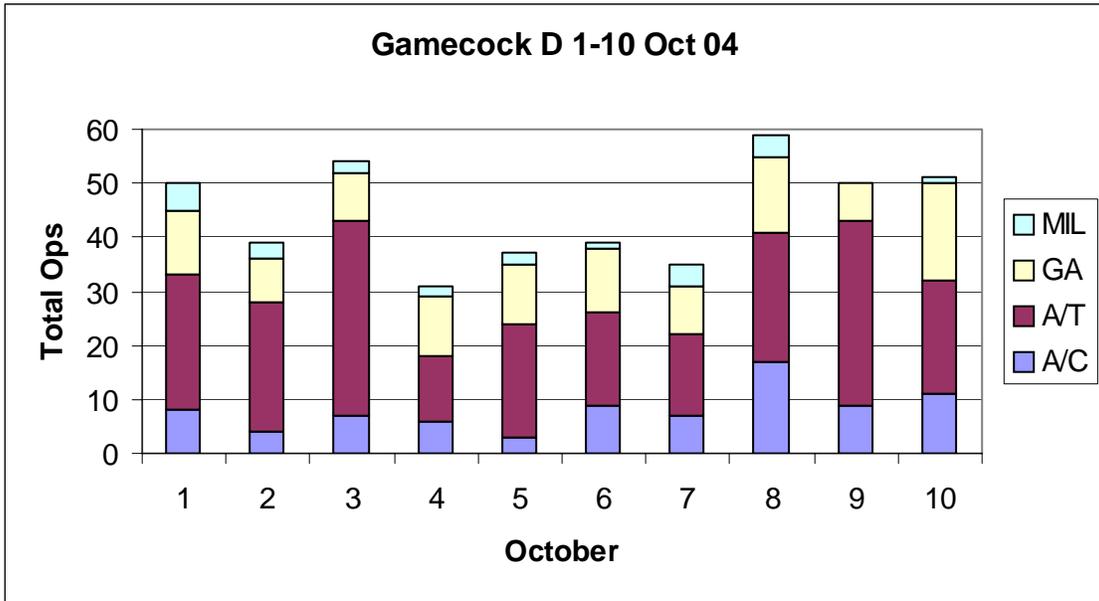
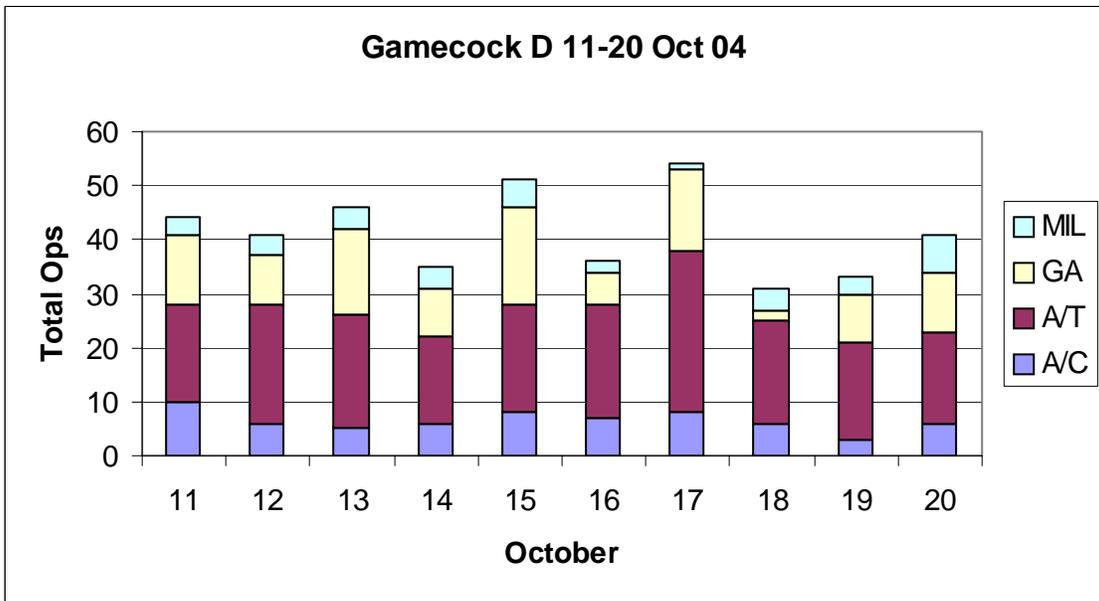
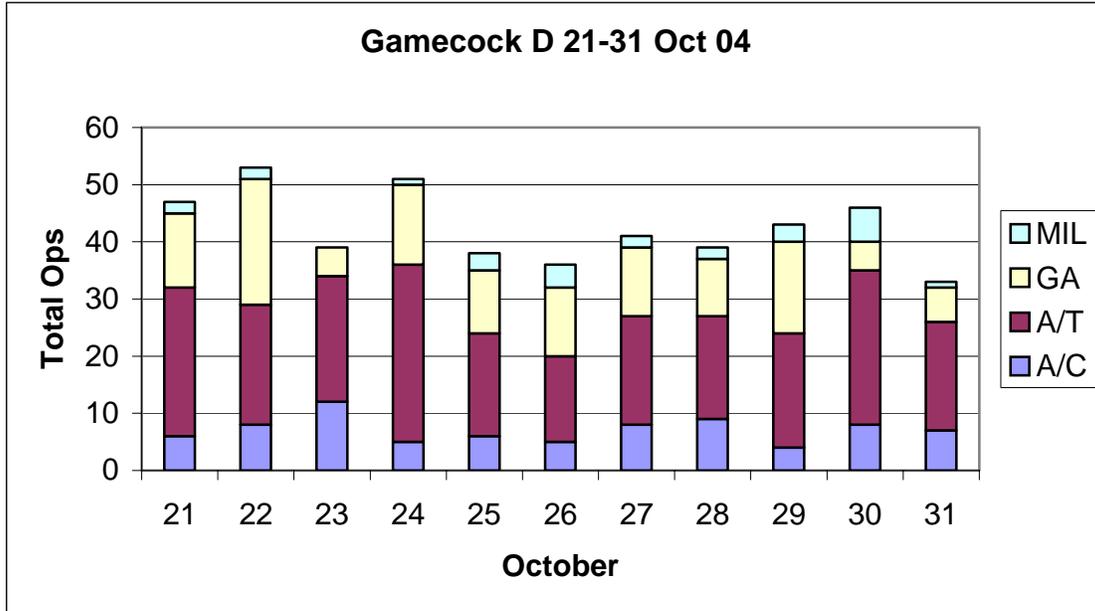


Figure 11. Aircraft Using Gamecock D / (F Proposed) Airspace
October 11 through 20, 2004



**Figure 12. Aircraft Using Gamecock D/ (F Proposed) Airspace
October 21 through 31, 2004**



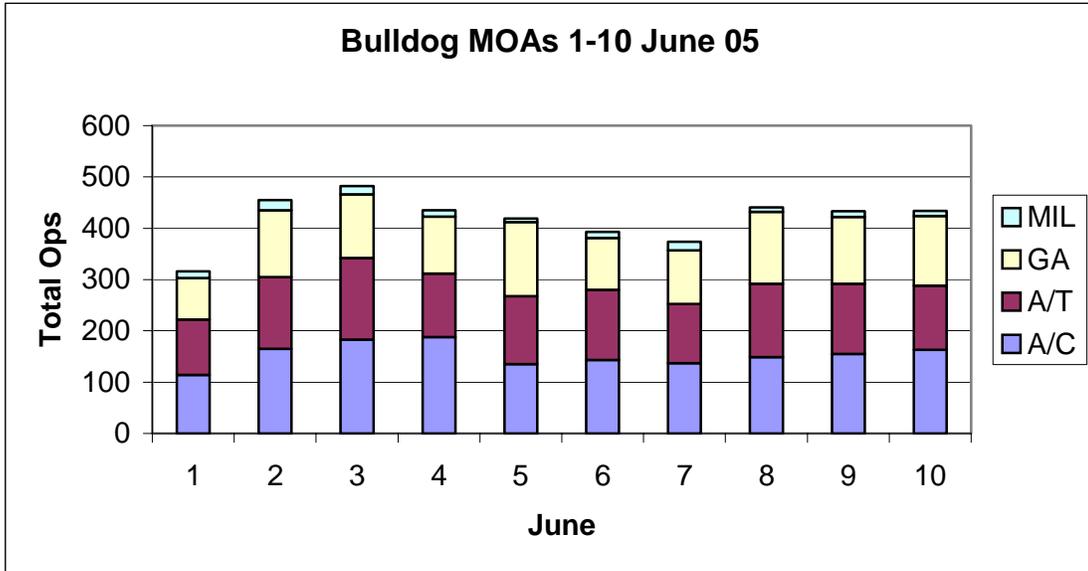
4.2 Bulldog Assessment

FAA provided airspace use information for the Bulldog MOAs and included flight and aircraft designations. Aircraft were grouped by daily operations and then by specific aircraft as commercial traffic (AC/AT, GA, and MIL). Total traffic in the Bulldog region for the month of June is shown in Table 3, and graphically in Figures 13 through 15.

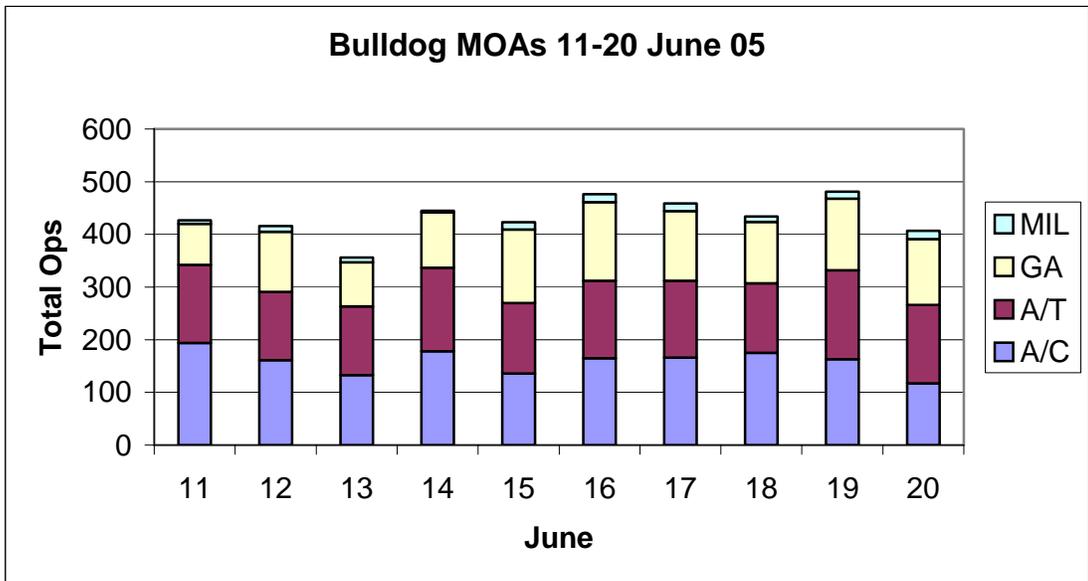
Table 3. Bulldog Region Traffic Counts For June 2005

BULLDOG MOAS TRAFFIC COUNTS					
June 2005					
<i>Date</i>	<i>AC</i>	<i>AT</i>	<i>GA</i>	<i>Mil</i>	<i>Total</i>
1-Jun	114	108	81	13	316
2-Jun	165	140	130	20	455
3-Jun	183	159	124	16	482
4-Jun	188	124	111	12	435
5-Jun	135	133	144	7	419
6-Jun	143	137	101	12	393
7-Jun	137	115	105	17	374
8-Jun	149	143	140	9	441
9-Jun	155	137	130	11	433
10-Jun	163	125	136	10	434
11-Jun	194	148	78	7	427
12-Jun	161	130	114	11	416
13-Jun	133	130	84	9	356
14-Jun	178	159	105	3	445
15-Jun	136	134	139	14	423
16-Jun	165	147	149	15	476
17-Jun	166	146	132	15	459
18-Jun	175	132	117	10	434
19-Jun	163	169	136	13	481
20-Jun	117	149	125	16	407
21-Jun	163	160	118	16	457
22-Jun	161	142	127	11	441
23-Jun	155	144	131	11	441
24-Jun	184	140	159	11	494
25-Jun	162	135	109	2	408
26-Jun	150	153	143	20	466
27-Jun	139	125	91	11	366
28-Jun	173	156	98	16	443
29-Jun	168	130	125	10	433
30-Jun	188	147	170	20	525
Total	4763	4197	3652	368	12980
Average	158.8	139.9	121.7	12.3	432.7
Percent of Total	36.7%	32.3%	28.1%	2.9%	100%

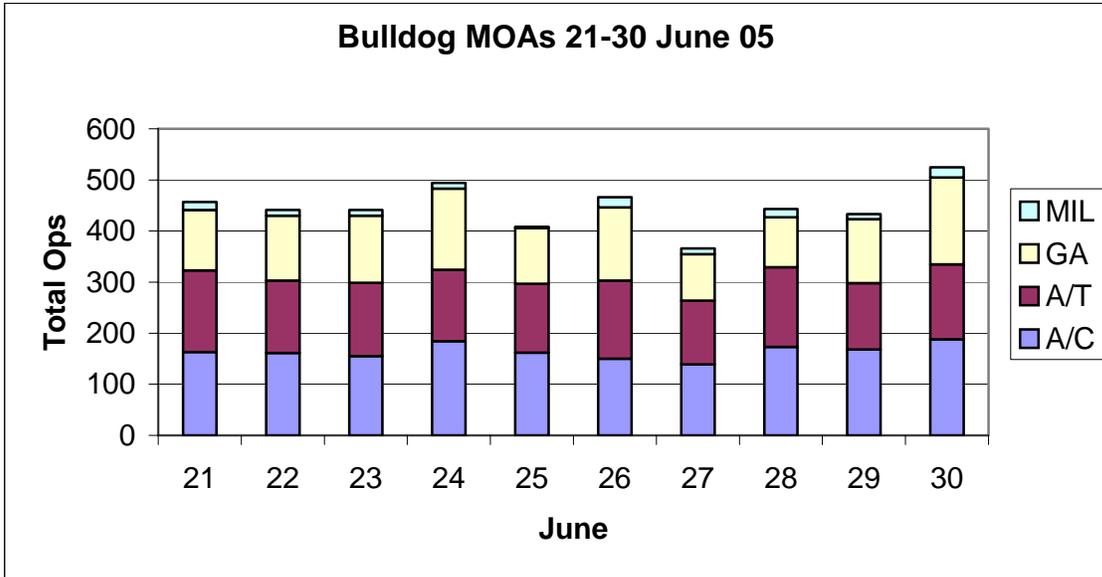
**Figure 13. Aircraft Using Bulldog MOA Airspace
June 1 through June 10, 2005**



**Figure 14. Aircraft Using Bulldog MOA Airspace
June 11 through June 20, 2005**



**Figure 15. Aircraft Using Bulldog MOA Airspace
June 21 through June 30, 2005**



5.0 FINDINGS

5.1 Gamecock Complex

FAA data were used to address the potential interaction between military and civil traffic in the areas encompassed by the proposed Gamecock E and Gamecock D/F MOAs. Jacksonville ARTCC information included the use of this airspace by IFR traffic. The details of military and civilian traffic are reflected in Figures 10 through 12 above. These traffic data are further summarized in Table 4.

Table 4. Synopsis of Traffic In Area of Proposed Gamecock E and Gamecock D/F (Proposed) (October 2004)

GAMECOCK E					
	<i>Air Carrier</i>	<i>Air Taxi</i>	<i>General Aviation</i>	<i>Military</i>	<i>Total</i>
Average Daily Total	29.3	28.0	22.3	4.4	84.0
Percent of Daily Total	34.9 %	33.3 %	26.6 %	5.2 %	100 %
Maximum Daily Use ¹	44	38	38	11	101
Minimum Daily Use ¹	19	19	9	0	70
GAMECOCK D/F (PROPOSED)					
Average Daily Total	7.2	21.5	11.1	2.8	42.6
Percent of Daily Total	16.9 %	50.4 %	26.1 %	6.6 %	100 %
Maximum Daily Use ¹	17	36	22	7	59
Minimum Daily Use ¹	3	12	2	0	31

Note: 1. Numbers of individual aircraft types and total operations reflect a range of values over a 31 day period. Therefore, the totals are not the sum of individual aircraft types.

Source: Personal Communication, Wiseman 2004.

Military operations constitute between 5.2 and 6.6 percent of total operations in the two MOAs. In the region of the Gamecock D/F MOAs, AT operations are dominant, whereas in the region of the Gamecock E MOA, AC/AT and GA operations are relatively equally distributed. Current operations in the region of the Gamecock E MOA are approximately twice the level of operations in the region of the Gamecock D/F MOAs. This would be expected inasmuch as the region of the Gamecock D/F MOAs is not currently used as military training airspace.

Although not wholly indicative of Air Traffic Control (ATC) workload, if these current activities were averaged over a 24-hour period, ATC services in the region of the Gamecock D/F MOAs would be required from approximately 2.5 to 1.3 times per hour. In the region of the Gamecock E MOA, service demands would range from 4.2 to 2.9 times per hour. If it were assumed that all operations occurred during an 8-hour period, demands would range from 7.4 to 3.9 times per hour in the Gamecock D/F region and from 12.6 to 8.7 times per hour in the Gamecock E region. Coordination between the FAA and the 20th Fighter Wing (20 FW) to deconflict this airspace use is not expected to place excessive demands on the ATC system.

5.2 Bulldog MOAs

The potential interaction between military and civil traffic in the areas encompassed by the Bulldog MOAs is assessed using data provided by the Atlanta ARTCC. Figures 13 through 15,

above, present these data. Table 5 summarizes the military and civil traffic in the region of the Bulldog MOAs.

Table 5. Synopsis of Traffic in Area of Bulldog MOAs (June 2005)

BULLDOG A/B					
	<i>Air Carrier</i>	<i>Air Taxi</i>	<i>General Aviation</i>	<i>Military</i>	<i>Total</i>
Average Daily Total	158.8	139.9	121.7	12.3	423.7
Percent of Daily Total	36.7%	32.3%	28.1%	2.9%	100%
Maximum Daily Use ¹	194	169	170	20	553
Minimum Daily Use ¹	114	108	78	2	302

Note: 1. Numbers of individual aircraft types and total operations reflect a range of values over a 30 day period. Therefore, the totals are not the sum of individual aircraft types.

Source: Personal Communication, Byers 2005.

Total military training activity within the Bulldog MOAs is not projected to change with the Proposed Action or an alternative. Some redistribution of existing training operations would occur within the Bulldog MOA airspaces. Military traffic in the region constitutes less than 3 percent of overall traffic. AC operations are somewhat greater than AT operations. GA operations are generally less than AT operations.

Although not wholly indicative of ATC workload, if these current activities were averaged over a 24-hour period, ATC services in the region of the Bulldog MOAs would be demanded from approximately 23.0 to 12.6 times per hour. If current activities were assumed to occur during an 8-hour period, demand could range from 69.0 to 37.8 times per hour. Overall levels of aircraft operations in the Bulldog MOAs are greater than levels in the Gamecock MOAs. Neither the military nor civilian level-of-use is projected to change. Continuing coordination between the FAA and the 20 FW to deconflict this airspace use is expected to prevent excessive demands on the ATC.

REFERENCES

Byers, Arthur. Airspace Manager, 20th Fighter Wing. 2004, 2005.

Wiseman, Edward J. Jr. FAA ATREP/20 OSS/OSAR. 2004.

Figures 1, 2, 3, 7, 8, and 9 were created in GRADE (Graphic Airspace Design Environment), a program created by ATAC Corp of Sunnyvale, California. They are derived from actual track information from Jacksonville ARTCC (ZJX) on the dates specified.